Heliospheric magnetic field configuration and its coronal sources

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The heliospheric magnetic field configuration is largely determined in the solar atmosphere. The interplanetary magnetic field is therefore intimately linked with the coronal structure and evolution during the solar cycle. Traditionally, this interdependence has been studied using time-stationary models which often manage to predict the approximate large scale properties of the magnetic field configuration.

However, the solar source is clearly time-dependent on many scales, for example, due to differential rotation effects. Fisk in 1996 has pointed out that such effects will lead to footpoint motions which significantly alter the heliospheric magnetic field configuration on large scale. We will review this work and address the importance of footpoint motion during the solar cycle. We will point out that these effects may be essential for the reconfiguration of the heliospheric magnetic field during solar activity maximum.